Quick Guide

Mighty Inverter
850/1.5K

V. 2.1

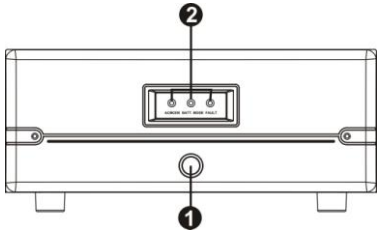
1. Introduction

This robust inverter is designed to power your home appliances or precious electronics. It also can accept wide input voltage to generate stable and pure power source to power downstream AC loads. Based on different types of loads, this inverter can provide pure and stable power either to house appliances or to sensitive personal computers via selectable operation modes. It is a brilliant choice for home owners or small office users in the unstable power area.

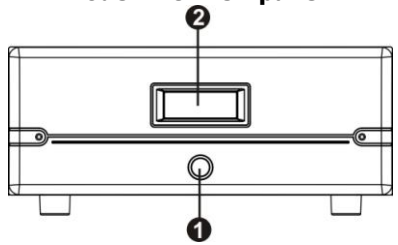
2. Product Overview

Front View:

Model with LED panel:



Model with LCD panel:

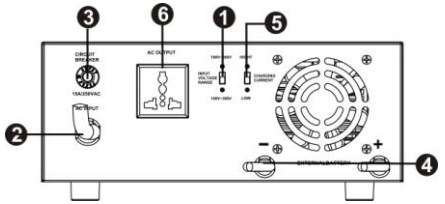


❶ Power Switch

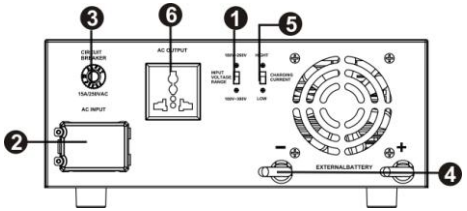
❷ Display indication (please see the Operation section for the details)

Back View：

Universal Type:

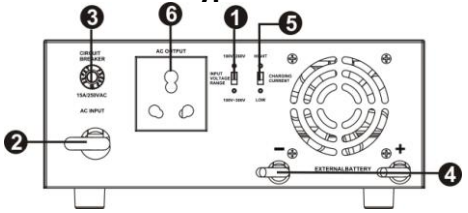


Model with input power cord

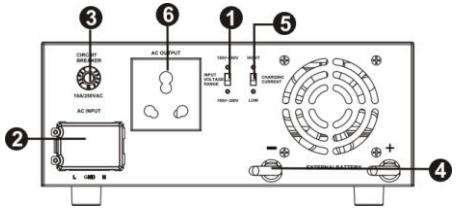


Model with AC terminal

South Africa Type

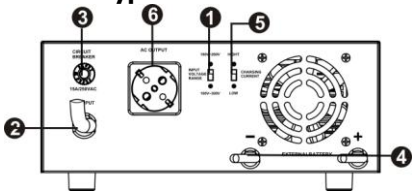


Model with input power cord

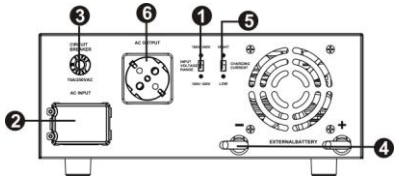


Model with AC terminal

Schuko Type



Model with input power cord



Model with AC terminal

❶ Input voltage range selector
❷ AC input
❸ Input breaker
❹ External battery connector
❺ Charge current selector (10A or 20A)
❻ Output receptacles

3. Important Safety Warning (SAVE THESE INSTRUCTIONS)

Before using the inverter, please read all instructions and cautionary markings on the unit, this manual and the batteries.

General Precaution-

Conventions used:
WARNING! Warnings identify conditions or practices that could result in personal injury;
CAUTION! Caution identify conditions or practices that could result in damaged to the unit or other equipment connected.

CAUTION! The unit is designed for indoor use. Do not expose this unit to rain, snow or liquids of any type.

CAUTION! To reduce risk of injury, only use qualified batteries from qualified distributors or manufacturers. Any unqualified batteries may cause damage and injury. Do NOT use old or overdue batteries. Please check the battery type and date code before installation to avoid damage and injury.

WARNING! It's very important for system safety and efficient operation to use appropriate external battery cable. To reduce risk of injury, external battery cables should be UL certified and rated for 75° C or higher. And do not use copper cables less than 8AWG.

WARNING! It's very important for system safety. AC input cable should be UL certified and rated for 105° C or higher. And do not use copper cables less than 18AWG.

CAUTION! Do not disassemble the inverter. Contact with the qualified service center when service or repair is required.

WARNING! Provide ventilation to outdoors from the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas at the top of the compartment.

CAUTION! Use insulated tools to reduce the chance of short-circuit when installing or working with the inverter, the batteries, or other equipments attached to this unit.

CAUTION! For battery installation and maintenance, read the battery manufacturer's installation and maintenance instructions prior to operating.

Personnel Precaution -

CAUTION! Careful to reduce the risk or dropping a metal tool on the batteries. It could spark or short circuit the batteries and could cause an explosion.

CAUTION! Remove personal metal items such as rings, bracelets, necklaces, and watches when working with batteries. Batteries can produce a short circuit current high enough to make metal melt, and could cause severe burns.

CAUTION! Avoid touching eyes while working near batteries.

CAUTION! Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.

CAUTION! NEVER smoke or allow a spark or flame in vicinity of a battery.

CAUTION! If a remote or automatic generator start system is used, disable the automatic starting circuit or disconnect the generator to prevent accident during servicing.

4. Specifications

MODEL	**850**	**1.5K**
CAPACITY	**850VA/600W**	**1500VA/1050W**
INPUT		
Voltage	230VAC	
Voltage Range	180-260 VAC (For personal computer) 100-300 VAC (For home appliances)	
OUTPUT		
Voltage Regulation (Batt. Mode)	230VAC ± 10 %	
Transfer Time	20 ms typical	
Waveform	Simulated Sine Wave	
BATTERY		
Battery Voltage	12 VDC	24 VDC
Floating Charge Voltage	13.7 VDC ± 2%	27.4 VDC ± 2%
Maximum Charge Current	10 A or 20 A	
Recommended Battery Capacity	100 Ah – 200 Ah	
PHYSICAL		
Dimension (DxWxH) mm	289 x 290 x 127	
Net Weight (kgs)	9	12

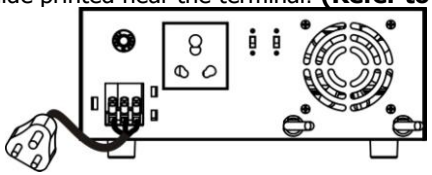
5. Installation

NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged.

Assemble AC Input Cable (Only available for the unit with AC terminal)

Step 1- Take away the cover of AC input connector.

Step 2- Connect an input power cord to AC input terminal. Following AC input polarity (L, N, GND) guide printed near the terminal! **(Refer to below chart)**



WARNING! Please use the appropriate AC input cable. Please refer to **Important Safety Warnings Section** for the details.

Step 3- Screw tightly the AC input power cord.

Connect External Battery

Step 1- Install a DC Breaker in a positive battery line. The rating of the DC Breaker must be at least 60Amp to guarantee safe operation without interruption. Keep the DC breaker off. **(see Fig. 1)**

Step 2- Connect battery cables to the external batteries. To have better performance, the recommended battery capacity is 100Ah – 200 Ah.
Following battery polarity guide printed near the battery terminal to connect external batteries!

RED cable to the positive terminal (+);
BLACK cable to the negative terminal (-)

Note: For the user operation safety, we strongly recommend that you should use tapes to isolate the battery terminals before you start to operate the unit. When connecting to external batteries, do not cause any short circuits.

1) Single battery connection (Refer to Fig. 1): When using a single battery, its voltage must be equal to the Nominal DC Voltage of the unit **(see below Table 1).**

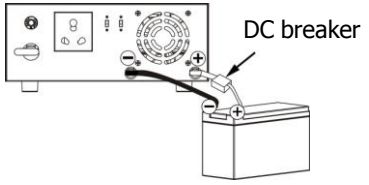


Fig. 1

Table 1

Model	Nominal Battery DC Voltage
850	12 VDC
1.5K	24 VDC

2) Multiple batteries in series connection (Refer to Fig. 2): All batteries must be equal in voltage and amp hour capacity. The sum of their voltages must be equal to the nominal DC Voltage of the unit.

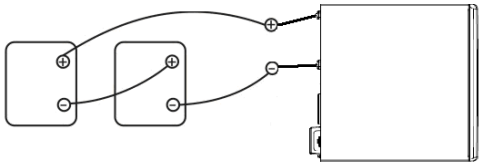


Fig 2

Note: when connecting batteries in series connection, it's necessary to use battery wires at #8 or above.

3) Multiple batteries in parallel connection (Refer to Fig. 3): Each battery's voltage must be equal to the Nominal DC Voltage of the unit.

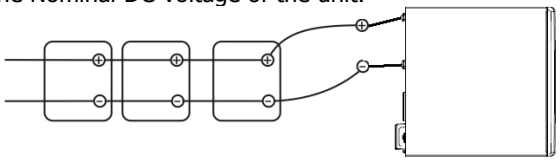


Fig 3

Note: when connecting batteries in parallel connection, it's necessary to use battery wires at #10 or above.

Step 3- Make sure to connect the polarity of battery side and the unit correctly.

Positive pole (Red) of battery to the positive terminal (+)of the unit.
Negative pole (Black) of battery to the negative terminal (-) of the unit.

Step 4- Take the DC breaker on.

Connect to Utility and Charge

Plug in the AC input cord to the wall outlet. The unit will automatically charge the connected external battery even though the unit is off.

6. Operation

Power On/Off

Once the inverter has been properly installed, press the power switch to turn on the unit. The unit will work automatically. When press the power switch again, the unit will be turned off.

WARNING! The unit may have output power when connected to the utility, even though it is powered off. To completely cut off the output power, please switch off the unit and disconnect the unit from the utility.

Input Voltage Range Selector

a). 180V-260V: setting for precious electronic devices
If you select this mode, the unit's input utility range will be 180~260VAC as normal home UPS. If the utility is higher or lower than this range, the unit will transfer to inverter mode automatically. And you can connect the computer systems or other precision home equipment when you select this operation mode.

b). 100V-300V: setting for home appliances
If you select this mode, the unit's input utility range will be extended to 100~300VAC. If the utility is higher or lower than this range, the unit will transfer to inverter mode automatically. So, you can connect the home equipments, such as light bulb, fluorescent tube, fan, or TV on this mode.

Caution!! If you select the home appliance mode and connect the computer to the output of the unit, the computer may reboot if the input voltage is too low to be accepted.

Charging Current Selector

a) High: setting battery charging current at 20A
b) Low: setting battery charging current at 10A

Model with LED Indicator & Audible Alarm

There are three indicators (Green/Red/Yellow) in the front panel of the unit.

Status	LED Indicator	Alarm
The unit is in Line mode.	Green LED on.	Off
The unit is in Line mode and charging battery.	Green LED on and yellow LED flashes every 3 seconds.	
Battery mode	Yellow LED flashes every 10 seconds.	Off
Off-mode charging.	Yellow LED flashes every 3 seconds.	Off
Overload warning	Yellow LED flashes every 0.5 second	Sounding every 0.5 second
Battery low warning	Yellow LED flashes every 0.5 second	Sounding every second
Output is short circuited.	Yellow LED and red LED are on.	Continuously sounding. The unit will shut down after it's in fault mode for 15 seconds.
Overload fault		
Output voltage is too low or too high.		
Battery bad	Red LED is on and Green LED flashes every 0.5 seconds.	
Battery is overcharging.	Red LED and Green LED are on.	
Battery weak.	Red LED flashes every 0.5 second.	

Model with LCD Display & Audible Alarm

Status	LCD Display	Alarm
Line mode		Off
Line mode with charging battery.	and flashes	Off
Battery mode		Off
Off-mode charging	and flashes	Off
Fault mode	Fault code will be displayed. Output fault: F0 Overload: F1 Over-charging: F2 Battery bad: F3 High output voltage: F4 Low output voltage: F5 Battery weak: F6	Continuously sounding. The unit will shut down after it's in fault mode for 15 seconds.
The unit is overload.	The mark will flash every second.	
Battery weak at battery mode.	The mark will flash every second.	

Load level indicator:

Display	Load Level
	75%~100%
	50%~75%
	25%~50%
	0%~25%

Battery capacity indicator:

Display	Battery Capacity
	battery voltage ≥ 12.5V (25V)
	12.5V (25V)> battery voltage ≥ 11.5V (23V)
	11.5V (23V)> battery voltage ≥ 11.0V (22V)
	battery voltage < 11.0V (22V)

7. Trouble Shooting

Use the table below to solve minor problems.

Problem	Possible Cause	Solutions
Utility power is normal but the unit is in battery mode.	AC input power cord is not connected well.	Check AC input power connection.
	Input breaker is activated.	Reset the input breaker.
When power fails, the backup time is shorten.	The unit is overload.	Remove some non-critical loads.
	Battery voltage is too low.	Charge the unit at least 8 hours.
	Battery capacity is not full even after charge the unit for at least 8 hours.	Check the date code of the battery. If the batteries are too old, replace the batteries.
Nothing display on the front panel when the utility power is normal.	The unit is not turned on.	Press power switch to turn on the unit.
	Battery is not connected well.	Check the external battery cable and terminal. Make sure all the battery connections to the unit are all correct.
	Battery defect.	Replace the batteries.
	Battery voltage is too low.	Charge the unit at least 8 hours.
The unit is in fault and restart circularly.	The unit is overload.	Verify that the load matches the capability specified in the specification.
	Output is short circuited.	Check the loads and remove loads which cause short circuit.

If there is any abnormal situations occur, which doesn't list above, please call the service people immediately for professional examine.